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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/806,477	03/23/2004	Jeffrey A. Engler		1697

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EXAMINER	
BALLARD, KIMBERLY A	

ART UNIT	PAPER NUMBER
1649	

DATE MAILED: 12/01/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/806,477	ENGLER ET AL.	
	Examiner	Art Unit	
	Kimberly A. Ballard	1649	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-7* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Application, Amendments and/or Claims

Claims **1-7** are pending and under examination in the instant office action.

Oath/Declaration

The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because:
The application to which the instant application claims priority has not been adequately identified. U.S. application 09/995,804, filed 11/29/2001, now U.S. Pat. 6,743,893, to which the instant application claims priority, has been incorrectly identified as 10/995,804 on the declaration.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 2 and 6 are rejected under 35 U.S.C. 102(a) as being anticipated by WO 00/25814 by Charalambous et al., published May 11, 2000.

Charalambous et al. disclose a vaccine against serogroup B meningococci, comprising a mimotope of a surface lipooligosaccharide of a serogroup B meningococcus (see p. 2 and claims 1-5). Charalambous teaches that the mimotope comprises a peptide epitope identified by screening a heptapeptide library with a monoclonal antibody specific for a particular surface lipooligosaccharide (see pp. 2-3). One such heptapeptide taught by Charalambous to be particularly useful is the peptide epitope HAIYPRH (see p. 3 and claim 6), which is identical to the instantly claimed SEQ ID NO: 1. Charalambous additionally teaches that these peptide epitopes (i.e., "mimotopes") may be linked to other moieties such as carrier proteins for enhancing the immunogenicity of the mimotope (see p. 4). The carrier protein taught by Charalambous et al. would thus meet the limitation of an "antigen" as recited in instant claim 6, because an antigen is commonly understood in the art to mean a molecule that

is capable of inducing an immunogenic response. Thus, the disclosure by Charalambous et al. would anticipate instant claims 1, 2 and 6.

Claims 1-3 and 6-7 are rejected under 35 U.S.C. 102(b) as being anticipated by WO 98/53804 by Smith et al., published December 3, 1998.

Smith et al. disclose compositions for use in targeting therapies to muscles cells, wherein the compositions comprise peptides which are capable of binding muscle cells *in vivo* (see Abstract). One such peptide disclosed by Smith is the peptide HAIYPRH, which is reported to represent a significant muscle binding peptide (see p. 14, lines 18-20) and which is identical to the instantly claimed SEQ ID NO: 1, thus anticipating instant claim 1. Smith discloses that the peptides can be used to target genes, proteins, pharmaceuticals, or other compounds to particular muscle tissue by ligating the muscle-specific peptide to drugs, proteins and nucleic acids (see p. 7, lines 3-4 and claims 9-10 and 27), thus meeting a recited limitation of instant claim 2. Because all proteins comprise antigenic sequences, the recited limitation of an "antigen" of claim 6 would also be met. Additionally, Smith discloses that the nucleotide sequences encoding the muscle-specific peptides can be used in the construction of fusion proteins or vectors for use in the invention (see p. 7, lines 8-15, and vector systems pp. 7-8), thus meeting a limitation of instant claim 7. Finally, Smith teaches that the muscle-specific peptides may be used to target pharmaceuticals and chemotherapeutic agents to treat muscle disease such as cancers or tumors of muscle origin (see p. 10, lines 7-11), thus meeting

a recited limitation of instant claim 3. Accordingly, the disclosure by Smith et al. anticipates instant claims 1-3, 6 and 7.

Claims 1-4 and 7 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,201,104 B1 to MacDonald et al., issued March 13, 2001, filed December 4, 1998.

MacDonald et al. teach compositions and methods that are effective for inhibiting unwanted angiogenesis, especially angiogenesis related to tumor growth. MacDonald teaches peptides and proteins that bind to angiogenesis-related peptides and proteins, such as ANGIOSTATIN™ protein or ENDOSTATIN™ protein (see paragraph spanning columns 6-7). One such binding peptide disclosed by MacDonald is SEQ ID NO: 7, which comprises the amino acid sequence HAIYPRH attached to GGGS, which is a flexible linker used, for example, for attaching the hepapeptide HAIYPRH to the pIII coat protein of M13 phage for phage display library screening (see Table 1, column 15, and column 18, lines 20-51), thus anticipating instant claims 1 and 2. Compositions comprising peptides such as HAIYPRH that bind ANGIOSTATIN™ protein and/or ENDOSTATIN™ protein are disclosed by MacDonald to be capable of being linked to a cytotoxic agent and used for treating or repressing the growth of a cancer, thus anticipating the "chemotherapeutic agent" of instant claim 3. MacDonald further discloses nucleotide sequences encoding the peptides that bind angiogenesis-related peptides and proteins, as well as expression vectors containing the nucleotide

sequences (see column 7, lines 31-42) and compositions comprising these expression vectors (see column 11, lines 39-51), thus anticipating instant claim 7..

MacDonald also teaches that peptides that bind angiogenesis-related proteins can be labeled isotopically or with other suitable molecules or proteins, and can be used in compositions for the detection and visualization (*in vivo* and *in vitro*) of angiogenesis-related protein binding sites with techniques including, but not limited to, positron emission tomography, autoradiography, flow cytometry, radioreceptor binding assays, and immunohistochemistry (see column 7, lines 55-62 and column 8, lines 40-43). Accordingly these teachings would meet the limitation of an "imaging agent" recited in instant claim 4. Therefore, the disclosure by MacDonald et al. anticipates instant claims 1-4 and 7.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,201,104 B1 to MacDonald et al., issued March 13, 2001, filed December 4, 1998, as evidenced by Hazum et al. (*Proc Natl Acad Sci USA*, 1980; 77(11): 6692-6695) and Tarasova et al. (*J Biol Chem*, 1997; 272(23): 14817-14824).

The claim is drawn to a composition comprising at least one peptide containing within its sequence at least one sequence which is HAIYPRH (SEQ ID NO: 1), wherein said peptide is fused to a fluorescing agent.

The teachings of MacDonald et al. are discussed above. In particular, MacDonald teaches compositions comprising the peptide HAIYPRH labeled with a radioisotope, or with other molecules and proteins, for use in the detection and visualization of angiogenesis-related protein binding sites with such techniques as PET (positron emission tomography), autoradiography, flow cytometry, radioreceptor binding

assays, and immunohistochemistry (column 7, lines 55-62 and column 8, lines 40-43). However, MacDonald does not explicitly teach attaching a fluorescing agent to the angiogenesis-related binding protein.

The teachings of Hazum et al. and Tarasova et al. are cumulative and are presented merely to illustrate common visualization techniques known and practiced in the prior art. For example, Hazum et al. teach the synthesis and use of a fluorescently-labeled hormone (which is a peptide) for visualizing internalization of the hormone by its corresponding receptor. Tarasova et al. teach a chimeric protein consisting of the cholecystokinin receptor type A (CCKAR) fused to green fluorescent protein (GFP) for studying receptor localization, internalization, and recycling in live cells in real time (see p. 14817). Accordingly, the cumulative teachings of Hazum and Tarasova teach the production and use of fluorescently-labeled peptides and proteins for visualization techniques.

One of skill in the art at the time the invention was made would readily know that in order to perform some of these detection and/or visualization techniques, in particular flow cytometry or immunohistochemistry, it is necessary and/or convenient to attach a fluorescent label to the binding peptide. For example, fluorescently labeled peptides are routinely used for visualization techniques as evidenced by Hazum et al. and Tarasova et al. The skilled artisan therefore would be motivated to make and use fluorescently-labeled binding proteins for visualizing and quantitating sites of ANGIOSTATIN™ and/or ENDOSTATIN™ protein binding sites *in vivo* and *in vitro* to improve the understanding of angiogenesis-related protein influence, and thus also make possible the development

of therapeutic agents for modifying angiogenesis related to disorders such as cancer and tumor development (see column 7, lines 3-8 and column 8, lines 40-43). Thus, while MacDonald does not explicitly state that one of the "other molecules or proteins" that label the binding peptides for use in detection and visualization techniques is a "fluorescing agent", visualization techniques involving attaching a fluorescent label to a binding protein of interest are well-known and practiced in the art, and the skilled artisan would reasonably expect that such fluorescently-labeled peptides would be capable of performing their desired function. Accordingly, instant claim 5 is rendered obvious by the teachings of MacDonald et al.

Conclusion

No claims are allowed.

Advisory Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimberly A. Ballard whose telephone number is 571-272-4479. The examiner can normally be reached on M-F 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Janet Andres can be reached on 571-272-0867. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kimberly Ballard, Ph.D.
November 22, 2006

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